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64 Electronic hand labeller.

67 An electronic thermal-printing hand labeller is comprised of a single printing-labelling unit which without any attachments is capable both of supplying single labels and strips of labels with backing sheet, and in addition can supply strip tags.

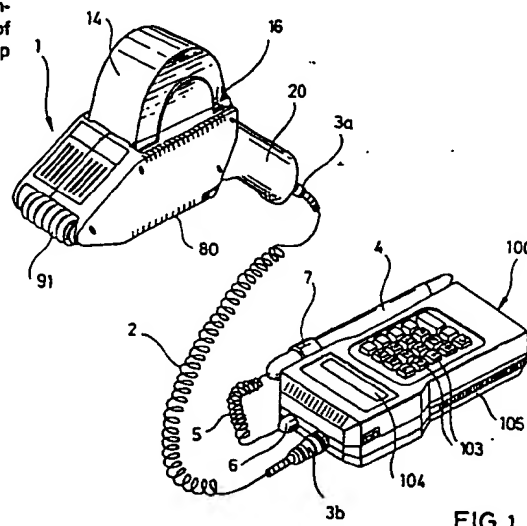


FIG.1

EP 0 250 910 A2

Field of the Invention

This invention relates to a portable electronic hand labeller which employs thermal printing. This invention particularly relates to a specialized electronic printing device which can be conveniently carried and is suited to in-store price marking, comprising the printing of a price bar code on a label or tag, the affixing of the label or tag to items of merchandise and, when the merchandise is sold, the use of an optical reader means or the like to read the price bar code.

Generally, stationary desktop type printers are used for this type of thermal printing. However, because such printers are large and heavy, the merchandise has to be brought to where the printer is, but this having to bring the merchandise to where the desktop printer is and then attaching the label is very inefficient.

Portable label printing and attaching devices (which are usually termed "hand labellers") are used in place of the aforesaid desktop printers, but with such hand labellers it is easy for errors to arise in such data input settings as prices, check digits and the like, and as such they have the defect of not being able to provide perfect printing, especially with respect to bar code printing where printing precision is demanded.

In view of the foregoing, this invention provides a thermal-printing electronic hand labeller which incorporates just the good points of the aforesaid desktop

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printers and hand labellers to provide good ~~0250910~~ efficiency and high precision.

DESCRIPTION OF THE PRIOR ART

In construction, conventional thermal-printing electronic hand labellers employ a system whereby rollers which engage with or pull a strip-shaped backing sheet to which are provisionally attached thermal labels are coupled to a motor by means of which the strip-shaped backing sheet is forcibly paid out toward the rear of the main unit.

That system refers to an ordinary label-by-label supply type of arrangement. Label-by-label supply arrangement as herein used refers to a plurality of thermally-printed labels provisionally affixed to a strip-shaped backing sheet which are peeled off at a sheet bending pin portion provided at the front of the main unit. The supplied labels are then affixed to items of merchandise by a label affixing means provided on the main unit. An exclusively label-by-label supply system is inconvenient, as in a supermarket, for example, at each sales counter, each of a continuous run of labels of the requisite quantity according to specified data, or each of a continuous run of labels handed directly to the tradesman delivering the merchandise, is applied manually without the use of an apparatus. What is referred to as a continuous run of labels means that the labels are not peeled off as per the above but that the thermal labels are paid out from the front of the main unit in the state of provisional adhesion to the strip-shaped backing sheet. The labels thus supplied

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are then peeled by fingertip or the like from the strip-shaped backing sheet and manually adhered to the merchandise. 0250910

Furthermore, because of the inconvenience of the aforementioned label-by-label supply, there is also a construction consisting of a separate attachment which is attached to the main unit to provide a continuous supply of labels with their backing sheet. However, the drawback of this arrangement is that the fitting and removal of the attachment to the main unit is troublesome.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an electronic thermal-printing hand labeller comprised of a single printing-labelling unit which without any fitting of an attachment to the main unit is capable both of supplying single labels and continuous runs of labels with backing sheet, and which in addition can supply continuous runs of tags using the same technique that is employed for providing the continuous supply of label strip.

The present invention attains these objectives by providing a thermal hand labeller comprised of a platen roller provided in opposition to a thermal print head for paying out thermal labels and continuous tags and a transport roller for paying out the strip-shaped backing sheet, the two rollers being driven by a motor so as to thereby enable labels to be supplied singly or in continuous runs.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a general perspective view of a printer-labeller unit, control unit and pen scanner setup according to a first embodiment of this invention; 0250910

Figure 2 is a general side view of the printer-labeller unit;

Figure 3A is an enlarged cross-sectional view of the principal parts of the printer-labeller unit;

Figure 3B is an explanatory diagram of the label routing with the printer-labeller unit cover and platen arm in the opened state;

Figure 4 is a partially cutaway side view of the platen arm retaining device provided on the printer-labeller unit;

Figure 5 shows the drive transmission for the platen roller and traction roller of the printer-labeller unit;

Figure 6 is an exploded perspective view of the printer-labeller unit;

Figure 7 is a perspective view of a label cutting device provided in the cover;

Figure 8 is an exploded perspective view of the control unit equipped with a keyboard, display and batteries; and

Figure 9 is a general perspective view of a label/tag printing device according to a second embodiment of the electronic hand labeller of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

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The preferred embodiments of the present invention will now be described with reference to the accompanying drawings.

With reference to Figure 1, the electronic hand labeller of the present invention consists basically of a set of three components: a printer-labeller unit 1 that can be operated by one hand; a separate control unit 100 connected by a cable 2 to the printer-labeller unit 1; and a pen scanner 4 connected to the control unit 1 by a cable 5.

The control unit 100 and pen scanner 4, like the printer-labeller unit 1, are portable and so can be carried about one's person such as in the overall pocket (not shown) or on the belt (not shown) of the operator. The control unit 100 is also provided with a keyboard 103, display 104, batteries 105, and a holder 7 for holding the pen scanner 4. In the drawing numerals 3a, 3b and 6 denote cable plugs.

With reference to Figures 2, 3A and 3B, a label holder 13 for holding a continuous thermal-label roll 95 is provided on the upper portion of an outer frame 11 of the printer-labeller unit 1. At the rear thereof is formed a grip 20 to allow the unit to be gripped in one hand and operated. Inside the outer frame 11 is a thermal printing device 30, a label transport device 70 and a label applicator portion 90. At the label holder 13 portion, a more or less semicircular label case 14 that encases the roll of thermal label strip 95 is affixed to a spindle 15 at the forward part of the outer frame 11 so as to be freely

openable and can stay opened toward the front of the main unit, and toward the rear (the operator side) is engaged at an engaging portion 16. With reference especially to Figures 1 and 2, a microswitch 22 operated by a pushbutton 21 is provided inside the grip 20. The microswitch 22 is detachably connected to a connector 8 and to the plug 3a of a cable 3 which is connected to batteries 105 provided inside the control unit 100. The microswitch 22 is also connected to the thermal print head 36 of a thermal printing device 30, a motor M of a label transport device 70, a diode type emission reflection lamp L and a reflection type sensor S.

With reference to Figures 3A, 3B and 6, the thermal printing device 30 attached to an inner frame 12 provided at one portion of the outer frame 11 is comprised of a combination of a thermal unit 31 and a platen roller 51. In more detail, a heat radiation member 34 is attached to the thermal unit 31 by means of the fixing screw 41 of a unit baseplate 32. By means of a thermal print head retainer plate 38, an O-ring 39 and a fixing screw 40, attached to the heat radiation member 34 at the forward portion thereof is a thermal print head 36 and a flexible ribbon cable 37 connected to the thermal print head 36 and running towards the rear thereof, with the said O-ring 39 being arranged at the join portion for secure attachment. The ribbon cable 37 is wired to the connector 8 via the microswitch 22, specifically by means of a circuit board 17 provided in the grip 20.

The entire thermal unit 31 is attached to the inner frame 12. More specifically, a pair of mounting bosses 32a provided on the baseplate 32 engage with socket portions in the inner frame 12 so that the front part of the thermal unit 31 can swing. A stepped portion 35 formed at the front edge of the heat radiation member 34 is positioned in spaced opposition to a main unit fixing portion 26.

On the upper part of the thermal unit 31, two resilient engaging members 33a and 33b comprised of a spring construction attached to the baseplate 32 are securely contacted, by utilizing the resiliency thereof, with a motor fixing portion 23a and a unit fixing portion 23b inside the inner frame 12.

The thermal print head 36 positioned at the lower front surface portion of the thermal unit 31 is aligned into position by means of an alignment step portion 35a formed on the heat radiation member 34. Thus, only when the front edge of the thermal print head 36 fits into this step portion 35a is the thermal print head 36 resiliently urged into its correct position, the construction working for parallelism between the thermal print head 36 and the platen roller 51 provided opposite thereto. The numeral 25a denotes through-holes for dissipating the heat of the motor M, while 25b is a window for the lamp L.

The platen roller 51 urged against the thermal print head 36 by the resilience of the resilient engaging members 33a and 33b is rotatably attached to a platen arm 50. The platen roller 51 is mounted on a spindle 52 the

ends of which are housed in retainer portions 53 consisting of cutouts in the frame of the platen arm 50. The platen roller 51 is rotated by a driving source constituted by the motor M, as described later, and the desired thermal printing is performed on thermal labels 96 of the roll of thermal label strip 95 pressed against the thermal print head 36. At the tip of the platen roller 51 the strip-shaped backing sheet 97 is caused to be reversed and the thermal labels 96 provisionally attached to the upper surface of the backing sheet 97 peeled off by a sheet bending pin 54.

The platen arm 50 can rotate counterclockwise about a pivot 77. Provided in the main unit is a label retainer member 72 the movement of which is interlocked with the rotation of the platen arm 50. A coupling pin 76 provided on a coupling portion 55 which curves up towards the back of the platen arm 50 is fitted into a slot 75 in the label retainer member 72. In interlocked motion with the rotation of the platen arm 50, the label retainer member 72 is pivoted about a fixed guide roller 74 provided at one end of the label retainer member 72, so that a moveable guide roller 73 provided at the other end thereof is displaced in the direction from the solid line toward the double-dot chain line. Thus, the construction is such that both of the guide rollers 73 and 74 in contact with the inclined label guide passage surface 19 provided below the label holder 13 are separated from the label guide passage surface 19 to form a label insertion passage. Provided near

the label retainer member 72 is the traction roller 71 of the label transport device 70 which is rotated by the motor M. A pressure roller 83 set inside the lower casing 80 exerts pressure on the traction roller 71, so that the strip-shaped backing sheet 97 is pressed between the rollers 71 and 83 and fed out from the rear of the main unit in order to peel the thermal labels 96 from the backing sheet 97.

In this embodiment the roller 71 works by exerting traction on the strip-shaped backing sheet 97. However, this may also refer to a conveying roller for guiding out the strip-shaped backing sheet, including an engagement roller comprised of, for example, a rotating member having engaging pins on its circumference which engage with conveying holes or perforations provided in the strip-shaped backing sheet 97 to cause the thermal label roll 95 to be advanced.

As shown in Figure 5, the platen roller 51 which pays out the roll of thermal label strip 95 from the front of the main unit and the traction roller 71 that pays out the strip-shaped backing sheet 97 from the rear of the main unit are caused to rotate by the motor M. The rotation of the motor M is communicated to the platen roller 51 by the rotation of a motor gearwheel 42 via intermediate gearwheels 43 and 44 which mesh with a platen roller gearwheel 45. The rotation of the traction roller 71 is effected from the motor M via a belt 47 mounted on pulleys 46a and 46b to

rotate a gearwheel 48 which rotates a traction roller gearwheel 49.

It is necessary for the traction roller 71 to be driven at a higher speed than the platen roller 51. The reason for this is that unless the arrangement is such that extra traction is applied to the strip-shaped backing sheet 97 after the separation of the thermal labels 96 by the driven rotation of the platen roller 51, good label separation will not be achievable.

The bottom cover 80 is pivoted about a spindle 92 of a label applicator roller 91 so that it can be opened in a clockwise direction. In its closed state, the bottom cover 80 has disposed therein an auxiliary peeling pin 81 adjacent to the bending pin 54 of the platen arm 50, and toward the rear is provided with a backing-sheet guide roller 82 and the pressure roller 83. The ends of the spindle 84 of the pressure roller 83 are fitted into retaining slots 85 formed in the frame of the bottom cover 80.

At the rear end of the bottom cover 80 are formed engaging insets 86 for accommodating therein a resiliently-urged set pin 27 that is fitted into a guide slot 28 formed in the outer frame 11.

The set pin 27 is interlocked with the retaining device 60 of the platen arm 50, as shown in Figure 4. More specifically, by means of a link 61 the set pin 27 is in contact with a spring 61b mounted on a spring shaft 61a attached to the inner frame 12. The spring 61b urges the

link 61 toward the front end (toward the left in Figure 4); thus, the spring 61b urges the positioning pin 27 toward the left end of the guide slot 28. A hook 63 is affixed to the end of the link 61 by a coupling pin 62. The hook 63 can turn about a pivot shaft 64 and has at its tip an engaging portion 63a which can be disengageably engaged with an engaging projection 56 formed on the platen arm 50 (this is shown in Figure 6). Mounted on a spring shaft 65a provided on the inner frame 12 is a spring 65b one end of which fits against the link 61 and the other end of which abuts against a spring stop 24, the link 61 thereby being urged counterclockwise to facilitate the opening of the platen arm 50.

The inner frame 12 also supports a backing-sheet roller arm 66 which urges the traction roller 71 against the pressure roller 83 of the bottom cover 80. The roller arm 66 pivotally mounted on a fulcrum shaft 67 has a housing portion 68 in which is accommodated a spring 69 which abuts against a stepped portion 12a of the inner frame 12, the entire roller arm 66 being thereby urged to rotate clockwise. Therefore, the traction roller 71 provided at the lower part of the roller arm 66 is urged in a clockwise direction, so that the strip-shaped backing sheet 97 guided between the traction roller 71 and the pressure roller 83 which is in pressure contact with the traction roller 71 is paid out from the rear of the main unit, while at the same time any slip that might occur between the excessively-rotating traction roller and the strip-shaped backing sheet

97 is absorbed by the action of the spring 69 of the roller arm 66.

As shown in Figures 3B and 6, the platen arm 50 is provided with a screwdriver access hole 57. Preferably the screwdriver access hole 57 is positioned so that it is in alignment with the fixing screw 40 of the thermal printing device 30 when the platen arm 50 is in its inclined open position.

On the side of the platen arm 50 is provided an engaging projection 56 for engaging with the engaging portion 63a of the hook 63.

As shown in Figures 3A, 6 and 7, the bottom cover 80 is provided at the back with a rear cutter 87 for the strip-shaped backing sheet 97, and at the front with a front cutter 88 for the roll of thermal label strip 95, in the state in which the thermal labels 96 are provisionally attached to the strip-shaped backing sheet 97.

In the first stage of the bar code printing operation using the main unit, the labels are loaded into the main unit as a continuous strip wound into a roll 95 on the label holder 13 of the printer-labeller unit 1 and the strip extended therefrom. As shown in Figure 3B, the loading of the labels is greatly facilitated by the opening of the bottom cover 80 and the opening in the opposite direction of the platen arm 50.

This label loading refers to ordinary label insertion. The roll of thermal label strip 95 is redirected to the rear at the sheet bending pin 54, and the required

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thermal printing is performed on the thermal labels 96 in pressure contact with the platen roller 51, which is rotated by the motor M, and the thermal print head 36, after which the thermal labels 96 are issued. The redirected backing sheet 97, similarly to the platen roller 51, is maintained in pressure contact with the pressure roller 83 and the traction roller 71 rotated by the motor M to be guided out of the rear of the main unit, the construction thus providing sound label delivery and label separation.

With respect to the bar code printing operation, the control unit 100 will now be described with particular reference to the exploded perspective view of Figure 8. As described, the control unit 100 is constituted separately from the printer-labeller unit 1 and is provided with a keyboard 103, a display 104 and batteries 105. The control unit 100 consists of a controller section 101 provided with the keyboard 103 and the display 104, and a battery section 102 provided with the batteries 105.

The controller section 101 is provided with a cover 106 which has a keyboard faceplate 107 which fits on the keyboard 103 and a display window 108 which fits onto the display 104; an electronic component circuit board 110 provided with a connector 112 for connecting the keyboard 103, an electronic device board 109, display 104 and electronic devices 111 with a personal computer or the like, a connector 113 for connecting the printer-labeller unit 1 and a connector 114 for connecting the pen scanner 4; and support frame 115 provided with a switch 116 and the like.

The battery section 102 is provided with a ~~0-250910~~ cover 119 that has formed thereon a dovetail groove 120; batteries 105 provided with a connector 123 for connecting up to an outside power source for charging and a connector 122 for connecting to the controller section 101; and a lower cover 124.

The battery section 102 is connected to the controller section 101 by a hook member 117. The hook member 117 is guided by the dovetail groove 120 on the battery cover 119 into engagement in a junction opening 118 formed in the support frame 115 and is resiliently maintained by the battery section 102 and the controller section 101.

Also, the connector 122 of the batteries 105 is connected to the plug 121 of the controller section 101 to provide an electrical connection therebetween.

The operation of the present embodiment will now be explained with reference to Figures 2, 3A, 3B, 5 and 8, using as an example the printing of a bar code.

The switch 116 of the control unit 100 is switched to ON and the data to be printed is input via the keys of the keyboard 103. Specifically, the merchandise code and price and the like are input, followed by the required quantity of labels. On the basis of this data input, check digits are computed automatically and displayed on the display 104 of the control unit 100.

Next, in the first stage of the printing, the microswitch 22 is switched on by pressing the pushbutton 21

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on the printer-labeller unit 1, whereupon in accordance with commands from the control section the specific heating elements in the thermal print head 36 heat up, producing coloration on the thermal label 96 which is in pressure contact with the platen roller 51.

The rotation of the motor M by a specified amount on the one hand causes the platen roller 51 to be rotated by a specific amount via the gearwheels 42, 43, 44 and 45 so that the roll of thermal label strip 95 on the platen roller 51 is thereby fed forward, and on the other hand causing the traction roller 71 to be rotated by a specific amount, via the belt 47 and the gearwheels 48 and 49, so that by the cooperative action of the pressure roller 83 the strip-shaped backing sheet 97 is drawn a predetermined distance.

As a result, the thermal labels 96 on the paid-out roll of thermal label strip 95 start to be peeled from the strip-shaped backing sheet 97 at the sheet bending pin 54. Following this, the thermal print head 36 is again used as described above and the next determined amount of printing performed on a thermal label 96, advancing the roll of thermal label strip 95, and following the completion of the printing of one label, the roll of thermal label strip 95 continues to be advanced until a sensing mark (not shown) provided on the reverse side of the strip-shaped backing sheet 96 is detected by a sensor S.

The thermally-printed labels 96 thus conveyed are then peeled from the strip-shaped backing sheet 97 at the sheet bending pin 54 provided in front of the platen roller

51 and are issued from an outlet 29 to a label applicator section 90.

Thus, the labels are fed out below the label applicator roller 91 while actually resting on the auxiliary peeling pin 81. The operator carrying the printer-labeller unit 1 by the grip 20 can, by sliding the label applicator roller 91 portion across the merchandise, apply thermal labels on which have been printed bar codes. When the preset number of labels have been produced, the electrical and mechanical operations of the printer-labeller unit 1 and the control unit 100 are halted, having reached completion.

In the case of the provision of a continuous strip of labels, i.e., the supply from the label outlet 29 provided at the front of the main unit of the printer-labeller unit 1 of labels that are still attached to the backing sheet, while similarly to when it is single labels that are being supplied the bottom cover 80 and the platen arm 50 are opened, there is no redirection of the roll of thermal label strip 95. When the continuous thermal-label strip has been guided along the label guide passage surface 19 and brought to the outlet 29 from the platen roller 51 portion, the insertion is completed by just locking the platen arm 50 and the bottom cover 80.

Then, again in the same way as the operation already described in the above, pushing the pushbutton 21 on the printer-labeller unit 1 starts the rotation of the motor M which causes the platen roller 51 to rotate via the gearwheels, thermal printing to be performed and the labels

to be issued in a continuous strip from the front of the main unit.

This device is also provided with online capabilities. By connecting the connector 112 of the control unit 100 to a personal computer, data input from the personal computer or stored on disk can be communicated to the printer-labeller unit 1 to have the required printing performed on the thermal labels. In addition, data can also be input via the pen scanner 4.

The label cutting means will now be described with reference to Figures 3 and 7. After the required thermal printing has been carried out on the continuous thermal-label strip, labels are either fed out the front of the printer-labeller unit 1 in a continuous strip while still attached to the backing sheet, or the labels are peeled from the backing sheet and fed out one at a time and the strip-shaped backing sheet is redirected backwards.

Usually labels are issued singly. Specifically, the labels on the roll of thermal label strip 95 are thermally printed by the thermal print head 36 and the driven platen roller 51 and at the sheet bending pin 54 the thermal labels 96 are separated by the tractive effect of the backing sheet 97. The backing sheet 97 is then guided by the guide roller 82 and directed out of the main unit by the traction roller 71 and the pressure roller 83.

With the label provision and application, when the backing sheet 97 is fed out from the rear of the main unit it is cut off when it reaches a suitable length. This

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cutting of the backing sheet 97 is performed by a cutter 87 provided toward the rear of the bottom cover 80.

In the other case, that where after a set number of labels which been issued without being peeled off and applied by the label applicator roller 91, but instead are to be manually applied to the merchandise, i.e., the provision of a continuous strip of labels with their backing sheet, a front cutter 88 is provided at the front of the bottom cover 80 to cut off the continuous strip of labels with backing sheet issuing from the front of the main unit.

The bottom cover 80 being provided with the said rear cutter 87 and front cutter 88 is convenient as both cutters can be used, the rear cutter 87 for when the usual single label supply is employed and the front cutter 88 for when labels with backing sheet are being fed out to the front of the main unit.

The label/tag printing device will now be described in a second embodiment of the present invention, with reference to Figures 3A, 3B and 9.

The present electronic hand labeller is usually applied to thermal labels, but the construction of the present device allows it to also be used for printing thermal tag strip. As shown in Figure 9, when a continuous strip of thermal tags wound into a roll 140 is to be printed, the control unit 100 provided with the printer-labeller unit 1, keyboard 103, display 104 and batteries 105 is set on a stand 130.

The stand 130 has a control unit channel 133 on the control unit side 131 in which the control unit 100 is set, and a printer-labeller channel 134 on the printer-labeller unit side 132 in which the printer-labeller unit 1 is set. The operating side of the control unit side 131 is formed as a low-set incline to facilitate operation of the keys of the control unit 100, while the printer-labeller unit side 132 is arranged to be parallel to the outlet 29 of the printer-labeller unit 1 to facilitate the feeding out of the tags, and is also provided with an anti-vibration baffle 135.

At the rear part of the printer-labeller unit side 132 of the stand 130 is a tag reel 136 rotatably affixed to a reel support upright 137. The end of the roll 140 of thermal tag strip mounted on the tag reel 136 has to be opposite an opening 18 formed when the label case 14 of the printer-labeller unit 1 is closed. For the thermal tag roll 140 wound onto the tag reel 136, when the bottom cover 80 and the platen arm 50 are in the opened state, the tag insertion is simple, starting from the opening 18, leading onto the label guide passage surface 19 and then to the label guide passage surface 78 of the platen arm 50, to form a single, straight line. The platen arm 50 and the bottom cover 80 are then shut, whereby the end of the thermal tag roll 140 is not redirected backwards as is the case when single labels are being issued, but instead is led in a straight line toward the outlet 29, similarly to when continuous strips of labels are being issued. In this

state, the printer-labeller unit 1 is positioned in the printer-labeller channel 134 in the stand 130.

Following this, the keys of the keyboard 103 on the control unit 100 are operated to input data. By then pressing the pushbutton 21 on the printer-labeller unit 1, tags thermally printed by the same printing operation used for labels are fed out from the outlet 29. It is important at this time that the platen roller 51 pressing resiliently against the thermal print head 36 be driven. Because this operation is the same as that used when continuous label strip is being issued, the details thereof are omitted here.

The present printing apparatus is comprised of the stand 130 into which the printer-labeller unit 1 and the control unit 100 are inserted, the label holder 13 for the roll of continuous thermal-label strip 95 on the printer-labeller unit 1, the openable label case 14, the opening 18 formed when the label case 14 is closed, the driven platen roller 51 provided inside the main unit, and on the stand 130, facing the opening 18, the tag reel on which is wound the continuous thermal-tag strip 140, thus enabling both labels and tags to be printed. Also, the printer-labeller unit 1 and the control unit 100 with the keyboard for input are securely fitted into place on the stand 130, which provides stability during input operations and facilitates the issuance of label strip with backing sheet and of tags.

As has been described in the foregoing, the present invention is comprised of a label feed-out platen roller 51 provided in opposition to a thermal print head 36

at the front part of the main printer-labeller unit 1, a transport roller at the rearward part of the main unit for feeding out the strip-shaped backing sheet, and a motor M which powers the rotation of both rollers. This arrangement allows the issuance of single labels which are each peeled from the backing sheet, and of continuous label strips with the labels still provisionally attached to the backing sheet, without the use of attachments such as have been conventionally required. As such it has the merit of expanding the range of applications of labellers.

TABLE OF REFERENCE NUMERALS

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NO.	JAPANESE	ENGLISH		OTHER COUNTRIES
		TRANSLATOR	U. S. A.	
M		MOTOR		
1		PRINTER-LABELLER UNIT		
13		LABEL HOLDER		
14		LABEL CASE		
18		JUNCTION OPENING		
29		OUTLET		
30		PRINTING DEVICE		
36		THERMAL PRINT HEAD		
50		PLATEN ARM		
51		PLATEN ROLLER		
70		LABEL TRANSPORT DEVICE		
71		TRACTION ROLLER		
80		LOWER CASING		
87		REAR CUTTER		
88		FRONT CUTTER		
90		APPLICATOR PORTION		
95		THERMAL-LABEL ROLL		
96		THERMAL LABELS		
97		BACKING SHEET		
100		CONTROL UNIT		
103		KEYBOARD		
104		DISPLAY		
105		BATTERIES		
130		STAND		
136		TAG REEL		
140		ROLL		

CLAIMS

1. An electronic hand labeller comprised of a thermal label feed-out platen roller provided in opposition to a thermal print head at the front part of a main printer-labeller unit, a transport roller toward the rear part of the main unit for feeding out strip-shaped backing sheet, and a motor M which powers the rotation of both rollers, enabling the issuance of single labels and of continuous label strips.

2. An electronic hand labeller possessing a label cutting means, which has provided on the bottom portion of the printer-labeller unit a bottom cover which can be pivoted open and which is provided at the front and rear with cutters enabling the cutting of labels that are issued singly or as continuous strips.

3. An electronic hand labeller provided with a printing device able to print both labels and tags, comprised of a control unit and a printer-labeller unit connected by a cable positioned on a stand, and the combination with the printer-labeller unit of a label holder for holding a roll of thermal label strip, an opening formed when the openable label case is closed, driven platen and transport rollers provided in the main unit, and a continuous strip of tags wound on a tag reel which is provided on the stand opposite the opening.

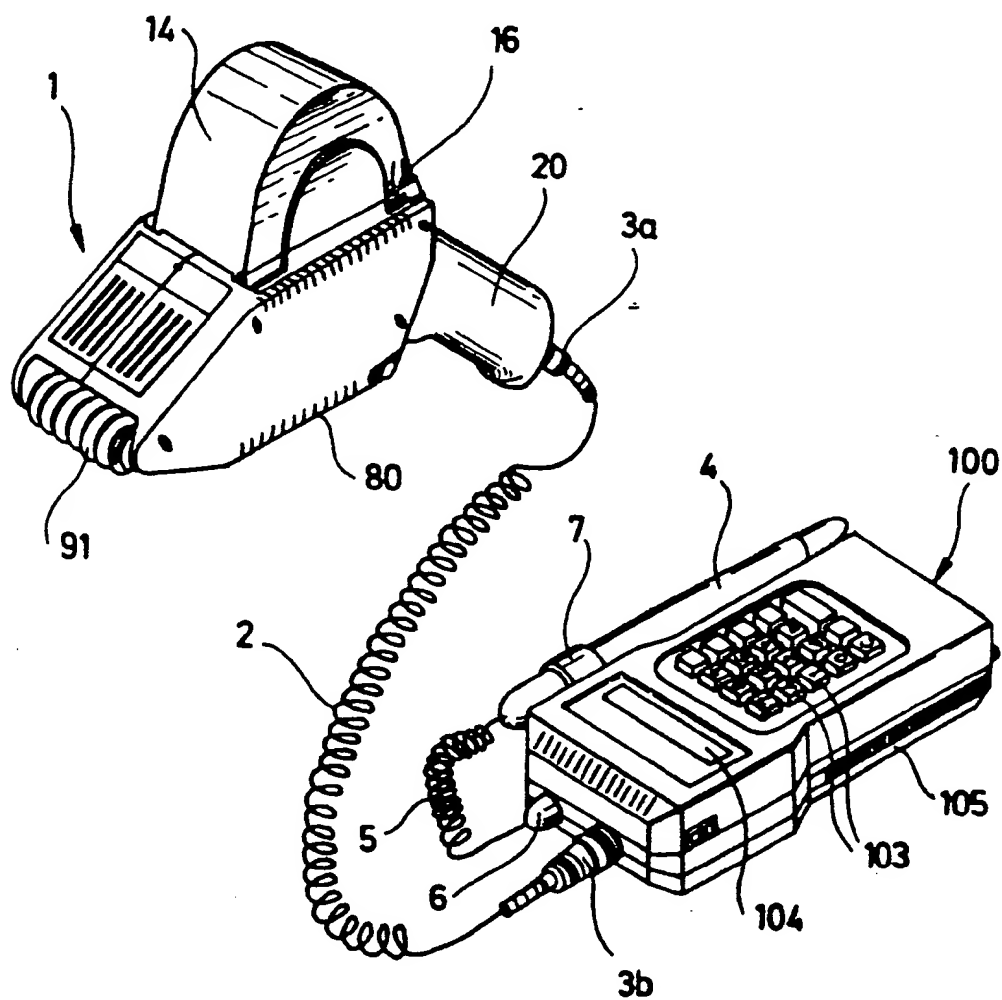


FIG.1

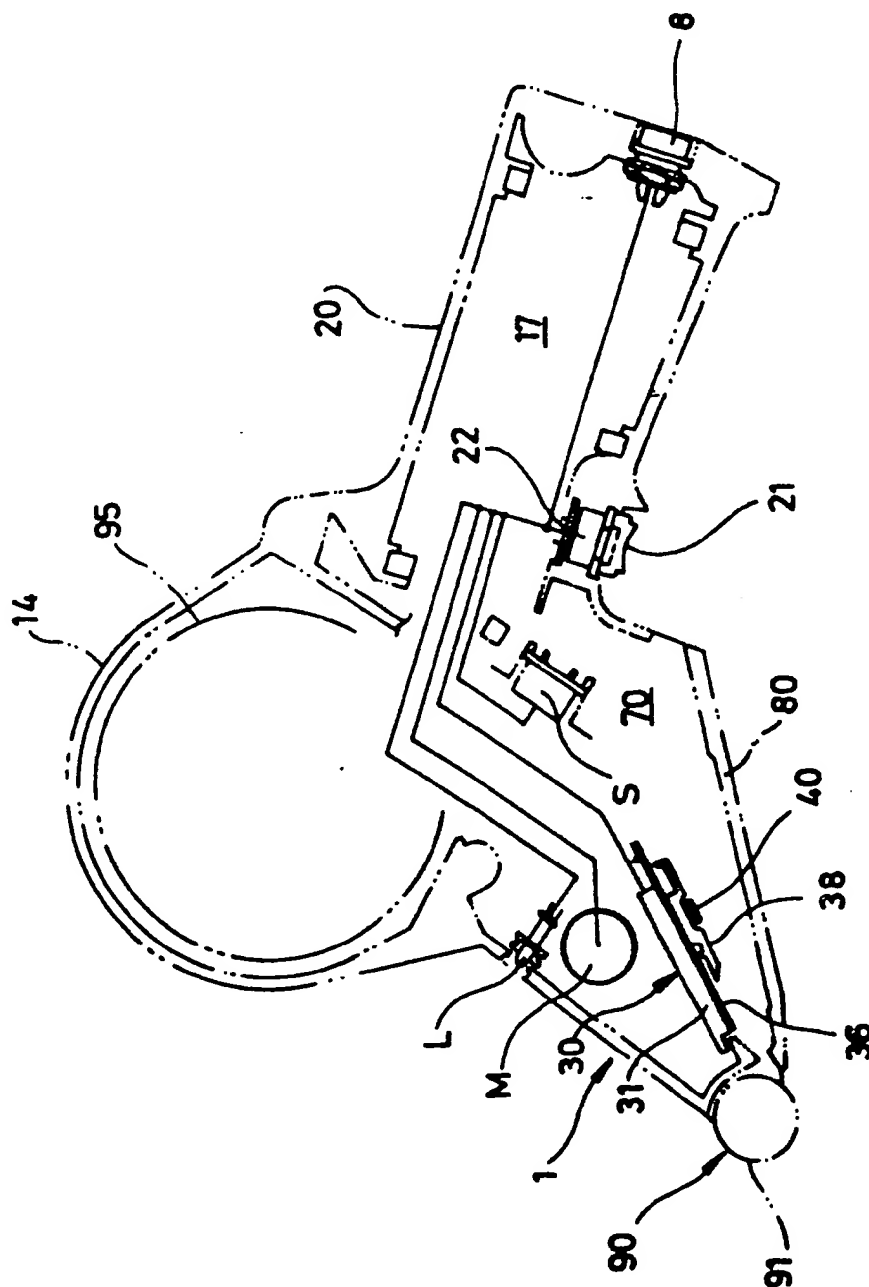


FIG. 2

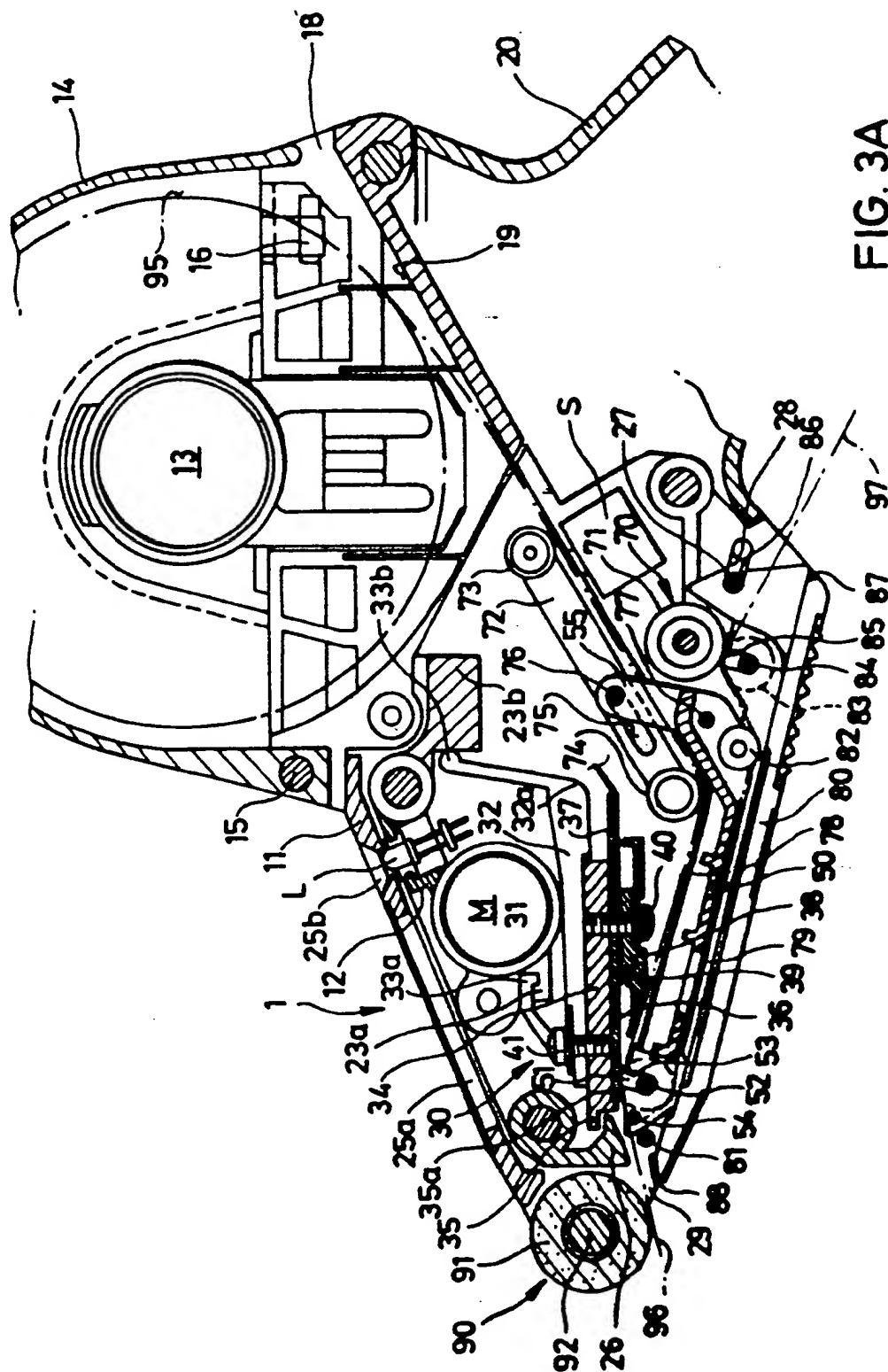


FIG. 3A

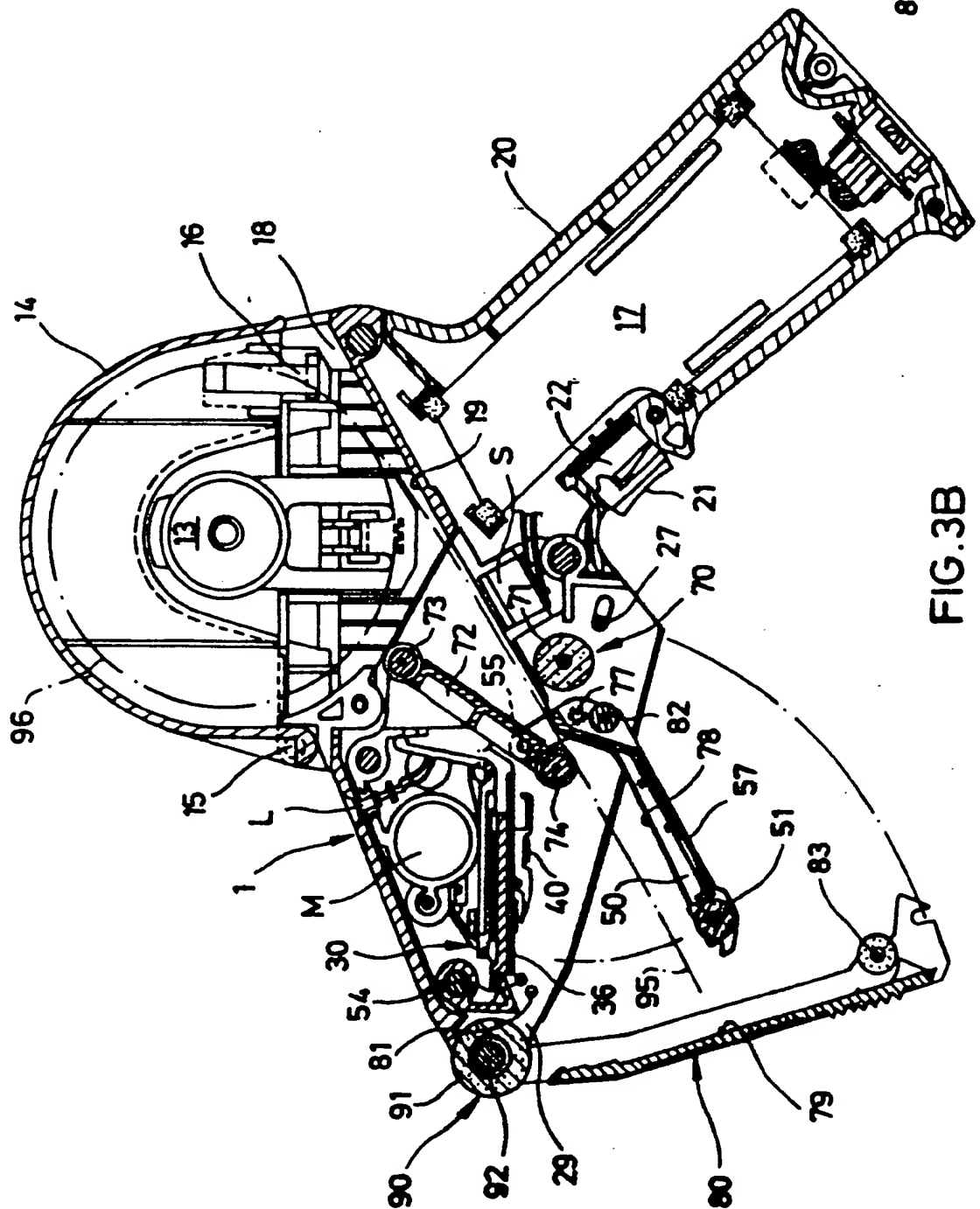
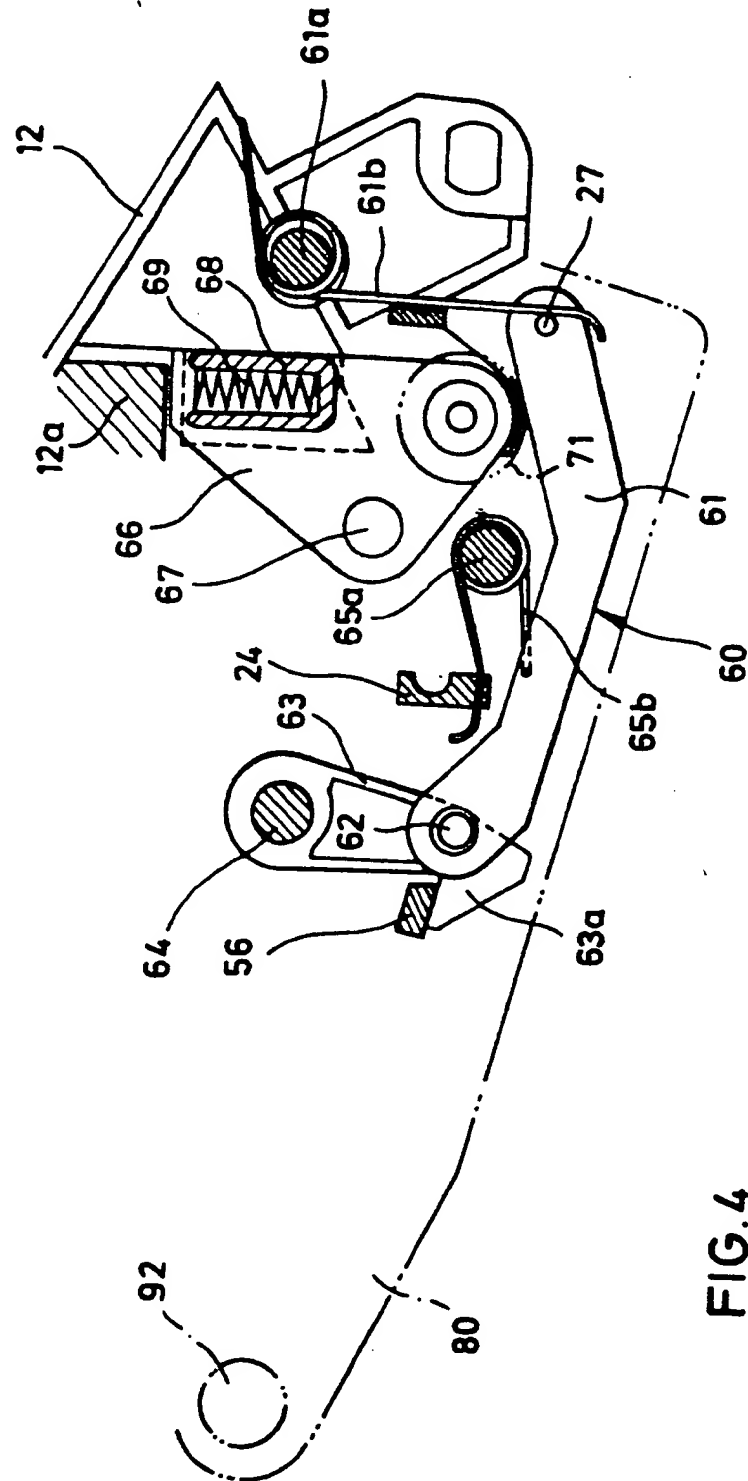


FIG. 3B



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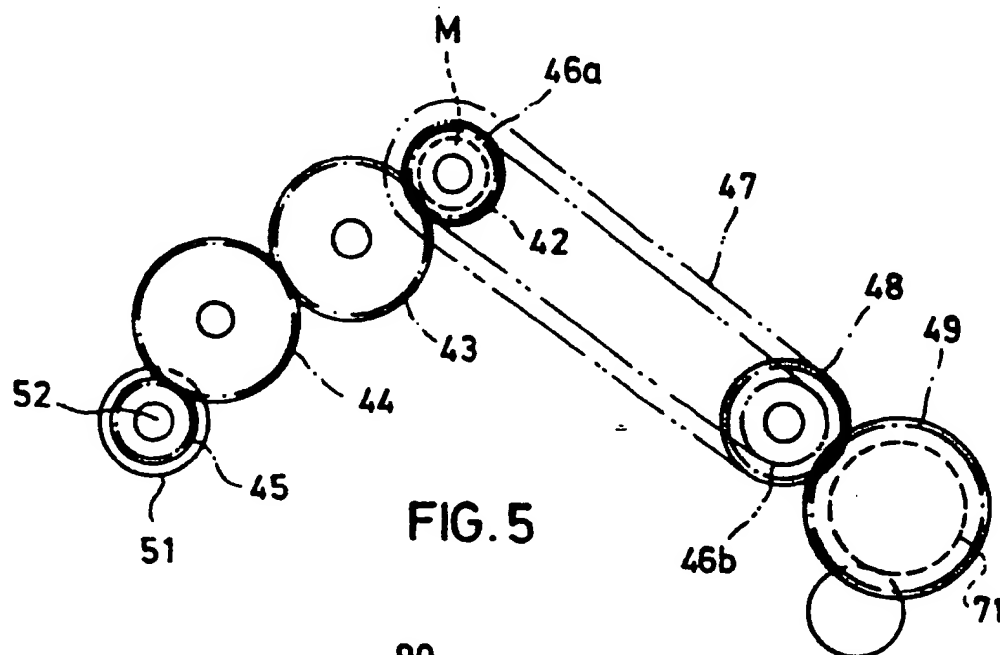


FIG. 5

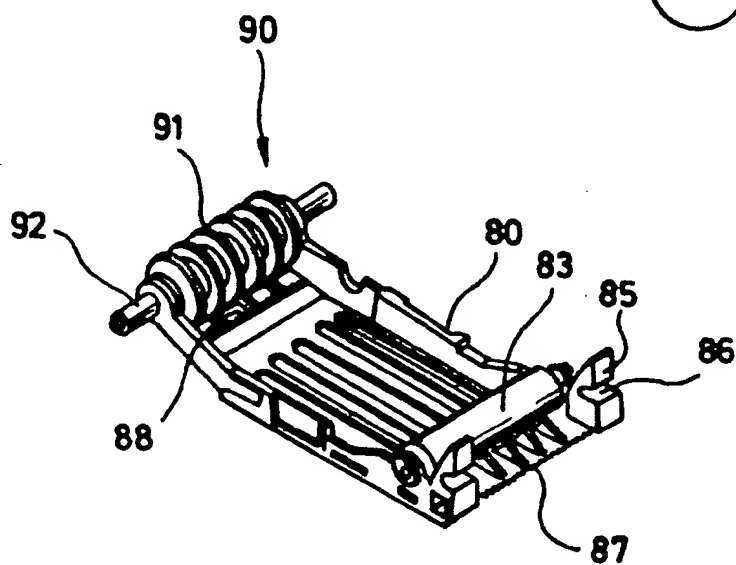


FIG. 7

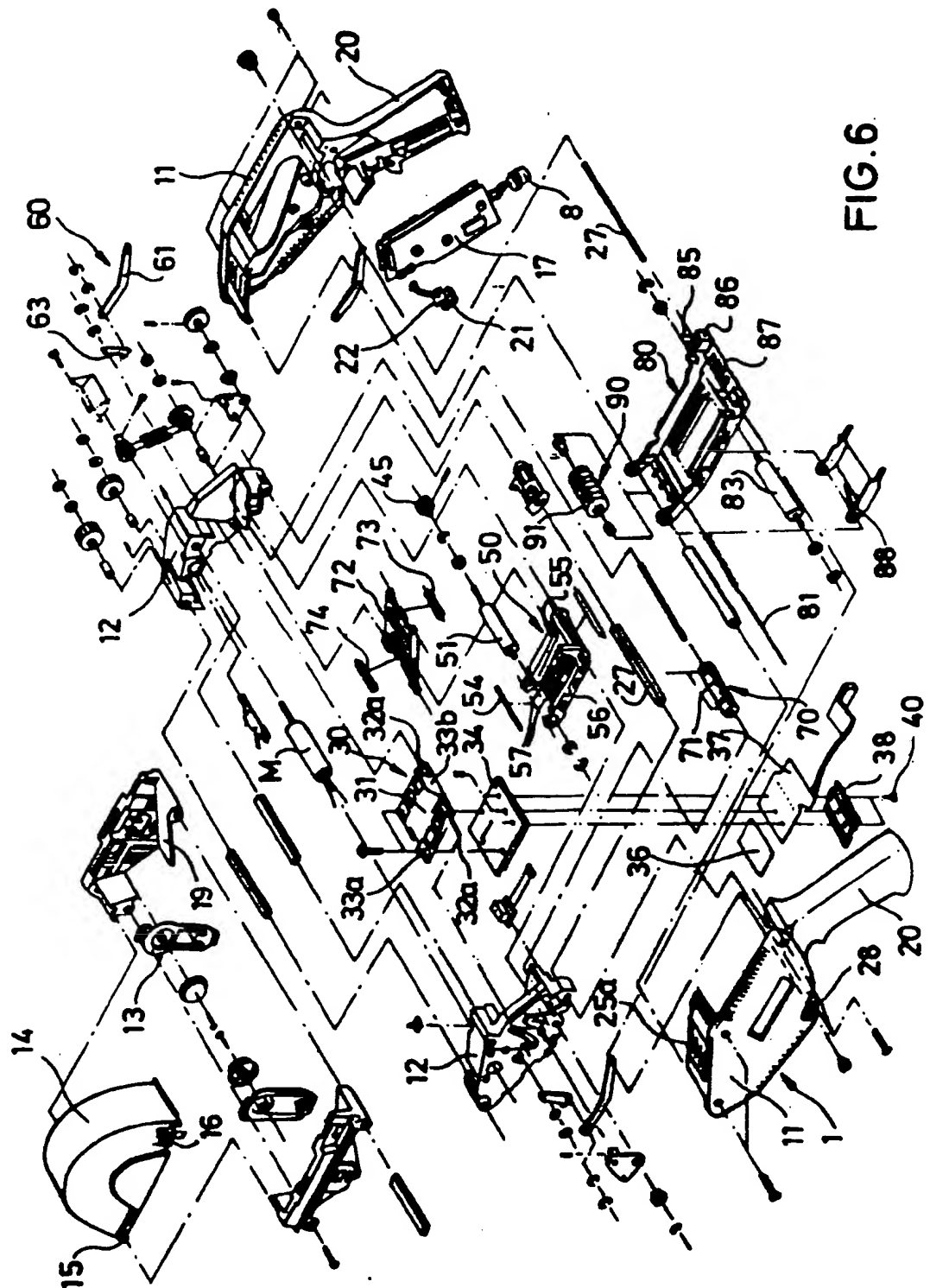
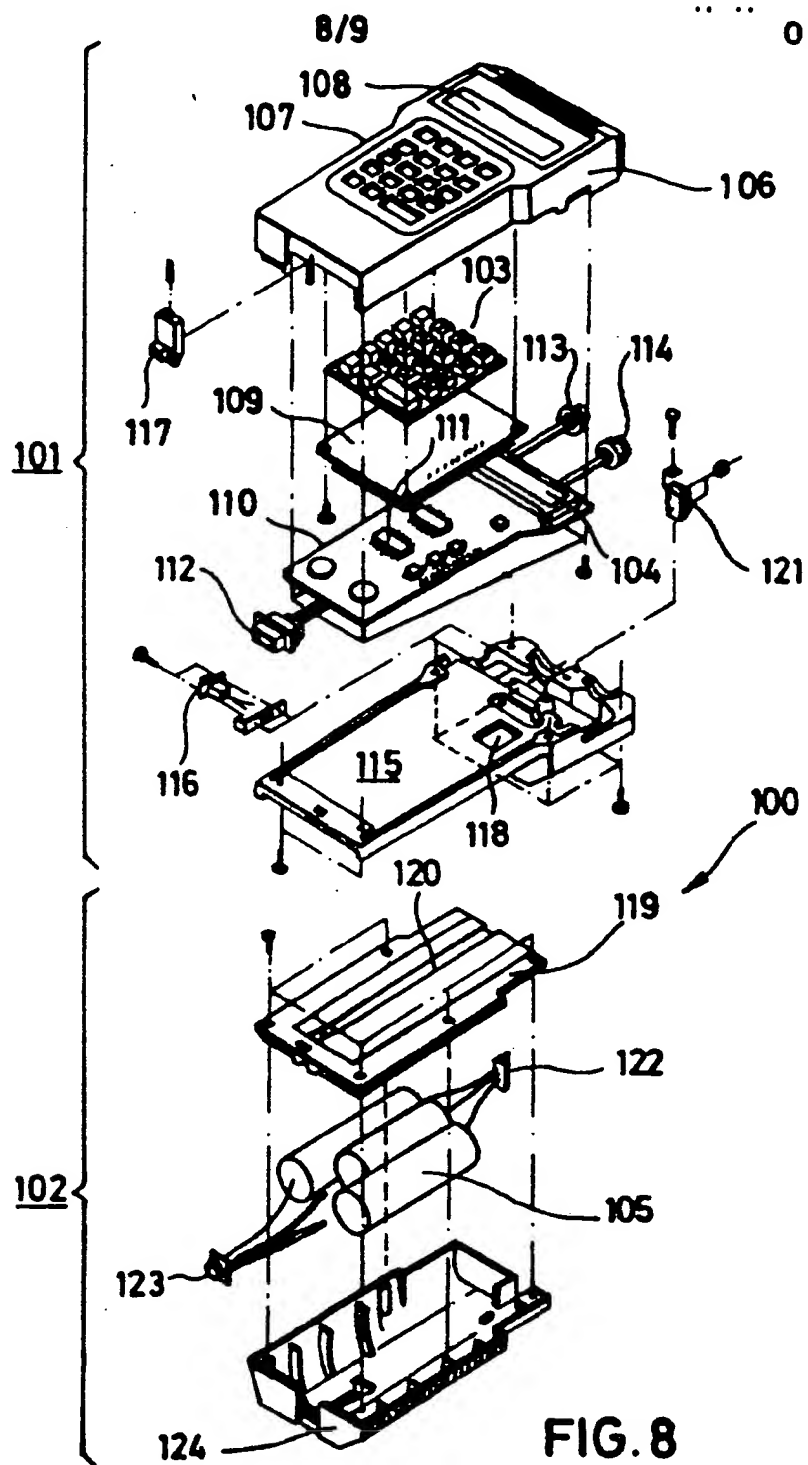


FIG. 6



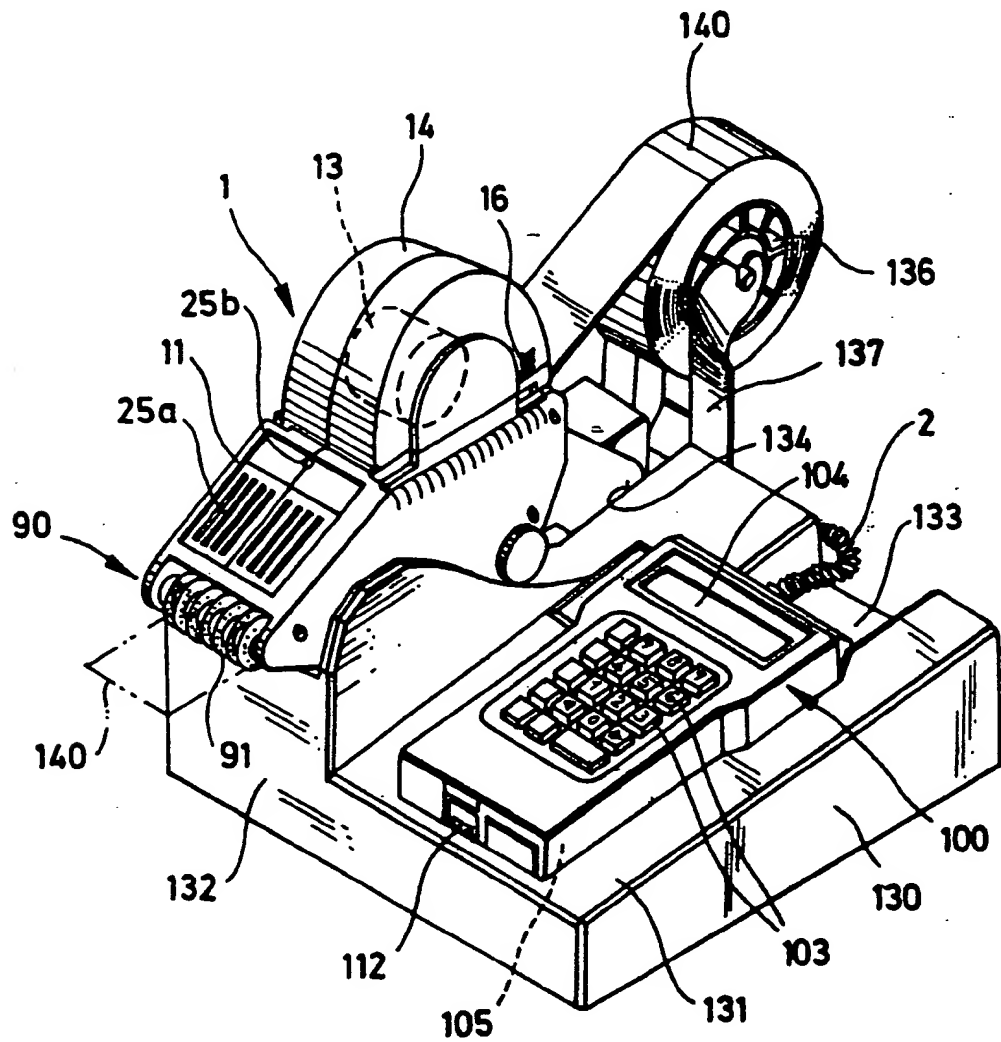


FIG.9

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54 Electronic hand labeller.

57 An electronic thermal-printing hand labeller is comprised of a single printing-labelling unit which without any attachments is capable both of supplying single labels and strips of labels with backing sheet, and in addition can supply strip tags.

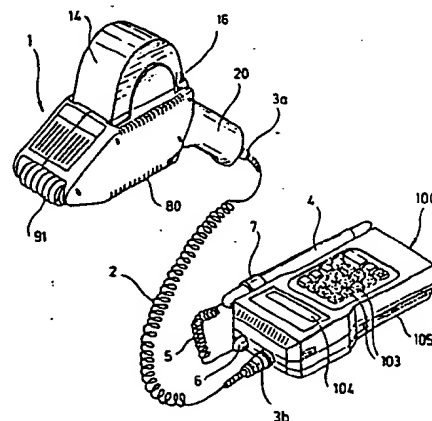


FIG.1

Croydon Printing Company Ltd.

EP 0 250 910 A3



European Patent
Office

EUROPEAN SEARCH REPORT

0250910

Application number

EP 87 10 8045

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
P,X	EP - A - 0 209 752 (SATO) * Figure 1; page 8, line 13 - page 9, line 4 *	1	B 65 C 11/02
E	EP - A - 0 208 203 (SATO) * Whole document *	3	
P,X, A	EP - A - 0 199 201 (SATO) * Figures 1-7; page 10, lines 3-27; claims *	1,3	
Y	GB - A - 2 087 310 (SHINSEI IND.) * Figures 1,2; page 2, line 105 - page 3, line 19; page 4, line 80 - page 5, line 6 *	2	
Y	US - A - 2 656 063 (KAFKA) * Figures 3,7,9,10; column 4, line 48 - column 5, line 6 *	2	
A	US - A - 4 026 758 (SATO) * Column 3, lines 48-63; figures 2,10 *	2	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	US - A - 4 472 232 (MANFREDI) -----		B 65 C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18-12-1987	Examiner DEUTSCH
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claim 1: Electronic hand labeller comprising a motor which rotates a platen roller and a transport roller
2. Claim 2: Electronic hand labeller comprising a bottom cover provided at the front and the rear with cutters
3. Claim 3: Electronic hand labeller combined with a control unit on a stand

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims: